IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
(Attorney Docket No. 13757US03)

In The Application Of:

Amir Morad, *et al.*

Electronically filed on September 7, 2011

Serial No.: 10/776,541

Filed: February 10, 2004

For: SYSTEM AND METHOD
FOR VIDEO AND AUDIO
ENCODING ON A SINGLE CHIP

Examiner: VO, TUNG T.

Group Art Unit: 2621

Confirmation No. : 3126

REPLY BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief responds to the Examiner's Answer mailed on July 7, 2011. Claims 10-36 are pending in the present application. This Reply Brief is timely filed within the period for reply, which ends on September 7, 2011.

REMARKS

As an initial matter, Appellant notes that the arguments set forth in the Examiner's Answer are essentially the exact same as those set forth in the Final Office Action. (Compare Answer at 16-37 with Final Office Action at 4-26.) Accordingly, the Appeal Brief addresses these arguments. (*See* Appeal Brief at 8-38.)

Appellant will now address certain issues raised in the "Response to Arguments" section, which begins on page 38 of the Answer.

I. The Claims Are Patentable Over The Proposed Combination of Adolph and Hinchley

A. Independent Claims 10 and 24

In responding to Appellant's arguments concerning the patentability of the claims over Adolph and Hinchley, the Examiner states as:

> The appellant argued the Examiner alleges that two different elements of Adolph (that produce two different output signals, i.e., the output of "MUX 1" and the output of "MMUX"), both teach producing Appellants' "first multiplexed stream." Appellants respectfully submit that the "programme data stream" output by "MUX 1" of Adolph cannot teach Appellants' claimed "first multiplexed stream," because the "MUX 1" does not have as inputs the "first compressed video," "second compressed video," "first compressed audio," and "second compressed audio," required by claim 10 "when operating in the first mode." The Examiner appears to be changing the element identified as teaching the claimed "first multiplexed stream" in the cited art to suit his needs, without explanation.
>
> The examiner strongly disagrees with the appellant. It is noted that the claim recited "which when **operating in the first mode** produces **a first multiplexed stream** from first compressed video, first compressed audio, second compressed video, and second compressed audio; and which when **operating in the second mode** concurrently

produces **the first multiplexed stream** from the first compressed video and the first compressed audio, and produces **a second multiplexed stream** from the second compressed video and the second compressed audio". The claimed invention clearly shows a first multiplexed stream is in the first mode, and the first multiplexed is in the second mode.

Adolph clearly discloses which when **operating in the first mode (MMUX of fig. 3)** produces **a first multiplexed stream (the output of EMUX of fig. 3)** from first compressed video (VE1 of fig. 3), first compressed audio (AE1 of fig. 3), second compressed video (VE2 of fig. 3), and second compressed audio (AE2 of fig. 3); and which when **operating in the second mode** concurrently produces **the first multiplexed stream (MUX1 of fig. 3, the MUX1 clearly produces the multiplexed from the VE1 and AE1 as considered the first multiplexed stream)** from the first compressed video (VE1 of fig. 1) and the first compressed audio (VE1), and produces **a second multiplexed stream (MUX2 of fig. 2, the MUX1 produces the second multiplexed stream)** from the second compressed video (VE2 of fig. 3) and the second compressed audio (AE2 of fig. 3). See the comparison below:

Appellant's Claim	Adolph Teaches
IN THE FIRST MODE: **multiplexer circuitry** that operates when operating in **the first mode** produces **a first multiplexed stream** from **first compressed video, first compressed audio, second compressed video**, and **second compressed audio**	MMUX OF FIG. 3 using four components as VE1, AE1, VE2, and AE2 of fig. 3
IN THE SECOND MODE: concurrently produces **the first multiplexed stream** from **the first compressed video and the first compressed audio**	MUX1 OF FIG. 3 using two components as VE1 and AE1 of fig. 3
IN THE SECOND MODE: produces **a second multiplexed stream** from **the second compressed video** and the **second compressed audio**	MUX 2 OF FIG. 3 using two components as VE2 and AE2 of fig. 3

As consistency, the both office actions show Adolph teaches MUX1 produces **the first multiplexed stream** from **the first compressed video VE1 and the first compressed audio AE1 and MUX 2 produces a second multiplexed stream from the second compressed video VE1** and the **second compressed audio AE2 in figure 3.**

(Answer at 39-42 (emphasis in original).) Appellant disagrees. The Examiner merely repeats the relevant claim language and points to Figure 3 of Adolph without identifying any text from Adolph to support the Examiner's interpretation of this reference. By failing to cite to any credible evidence to support this arbitrary and incorrect construction of Adolph, the Examiner has not established a *prima facie* case that claim 10 is unpatentable. *See In re Vaidyanathan*, Appeal 2009-1404 at pp. 18-19 (Fed. Cir. May 19, 2010) (nonprecedential) ("If the examiner is able to render a claim obvious simply by

saying it is so, neither the Board nor [the Federal Circuit] is capable of reviewing that determination. . . . If there is **neither record evidence nor detailed examiner reasoning**, the Board should not conclude that ... claims are obvious."); *see also In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) ("[T]he Board **cannot** simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense. Rather, **the Board must point to some concrete evidence in the record in support of these findings**."); *see In re Wada and Murphy*, Appeal 2007-3733 (A proper rejection that an Examiner make "a searching comparison of the claimed invention – **including all its limitations** – with the teaching of the prior art."); *see also* MPEP §706.02(j) ("It is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply.")

Moreover, a brief review of Adolph confirms that the Examiner's interpretation of this reference is incorrect. In this regard, Adolph describes Figure 3 as follows:

> FIG. 3 illustrates a block diagram of a transmitter for the transmission method according to the invention, two programmes being transmitted by way of example. Video and audio signals V1, A1, V2, A2 are each fed to a source coder VE1, AE1 and VE2, AE2, respectively. A common programme data stream is produced from the source-coded video and audio signals, together with supplementary data which are generated in a stage DE1 and DE2, respectively, in a programme multiplexer MUX1 and MUX2, respectively. The various (in the example of FIG. 3: two) programme data streams are then combined in a transport multiplexer MMUX to form a transport data stream in accordance with the MPEG2 system specification, the transport packets being identified on the basis of the packet identifiers. The priority bits are also set during the multiplex operation, since at this point in time it is known how the headers are distributed, as appropriate, between a plurality of transport packets. In

> accordance with the identifications by means of the packet identifiers and priority bits, the individual partial data streams are then distributed between three subchannels by the channel interface SP (called splitter in the case of the HDTVT system), in order to transmit the coded data in accordance with their importance in channels having a different error rate. . . . The signals are then provided with external error protection by means of Reed-Solomon coding in a coder ERS. Convolutional coding for the purpose of internal error protection as well as digital modulation are effected in the succeeding encoder unit MOD. Finally, the baseband signals are converted in a succeeding modulator BBRF into a form suitable for transmission (by satellite, by cable, terrestrially).

(Adolph at 4:30-5:2.) Nothing in the above passage or elsewhere in Adolph discloses or suggests a multiplexer circuit having two different modes of operation as required by Appellant's claim 10. Rather, as confirmed by the following passage, the circuit shown in Figure 3 only has a single mode of operation, namely one that combines data streams for multiple programs into a single transport data stream.

> FIG. 3 illustrates a block diagram of a transmitter for the transmission method according to the invention, two programmes being transmitted by way of example. Video and audio signals V1, A1, V2, A2 are each fed to a source coder VE1, AE1 and VE2, AE2, respectively. A common programme data stream is produced from the source-coded video and audio signals, together with supplementary data which are generated in a stage DE1 and DE2, respectively, in a programme multiplexer MUX1 and MUX2, respectively. The various (in the example of FIG. 3: two) programme data streams are then combined in a transport multiplexer MMUX to form a transport data stream in accordance with the MPEG2 system specification.

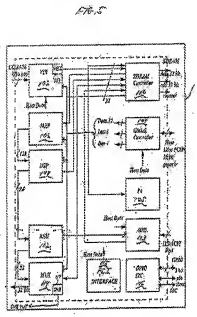
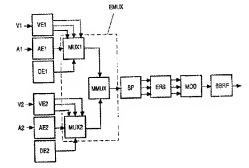
(Adolph at 4:30-42 (emphasis added).) Contrary to the Examiner's contention, MUX1, MUX2 and MMUX do not constitute different modes of operation as recited by Appellant's claim 1. Instead, these elements are different stages of Adolph's EMUX that

are used to combine the video and audio signals (V1, V2, A1, A2) from the first and second programs into a single MPEG2 transport data stream. Put another way, the Adolph's EMUX only has a single mode of operation, namely one that combines the video and audio signals (V1, V2, A1, A2) from the first and second programs into a single MPEG2 transport data stream.

Accordingly, claim 10 is patentable at least because the proposed combination of Adolph and Hinchley does not disclose or suggest a multiplexer circuitry that operates in a first mode and a second mode in the manner required by claim 10.

The Examiner also states as follows in responding to Appellant's arguments regarding claim 10:

> The appellant argued that Adolph does not disclose transmits the first multiplexed stream to circuitry external to the device via a first output of the device, and transmits the second multiplexed stream to circuitry external to the device via a second output of the device.
>
> The examiner strongly disagrees with the appellant. Adolph teaches the first multiplexed stream is performed by MUX1 of figure 3 in the second mode, and the second multiplexed stream is performed by MUX2 of figure 3 in the second mode. The first multiplexed stream is transmitted to circuitry external to the device by the MMUX, SP, ERS, MOD, and BBRF of figure via a first output (the output MUX 1) of the device, and the second multiplexed stream is transmitted to circuitry external to the device by the MMUX, SP, ERS, MOD, and BBRF of figure via a first output (the output MUX 2) of the device. See comparison below.

Claim invention relies on figure 1, MUX 114	Aldolph *[sic]*
	 Fig.3
It is clear that the MUX 114 is outputting the first multiplexed stream and the second multiplexed stream to the circuitry external.	Adolph discloses the MMUX is outputting the first multiplexed stream from MUX1 and the second multiplexed stream from MUX2 to the circuitry external delivered by SP, ERS, MOD, and BBRF.

(Examiner's Answer at 41-43.) Appellant disagrees. The Examiner's position is based upon the incorrect premise that Adolph's multiplexer operates in multiple modes in the manner required by claim 10. However, as previously explained, Adolph's multiplexer only has a single mode of operation, namely one that combines the video and audio signals (V1, V2, A1, A2) from the first and second programs into a single MPEG2 transport data stream. Adolph describes the "transport data stream" processed by the "encoder unit MOD" and "modulator BBRF" as being "combined in a transport multiplexer MMUX." In other words, the "transport data stream" of Adolph is a single

data stream output by the "transmitter" of FIG. 3. (*See* Adolph at 4:38-43.) Adolph's single data stream simply is not the same as Appellant's claimed "first multiplexed stream" and "second multiplexed stream."

Claim 10 is also patentable because the proposed combination of Adolph and Hinchley fails to disclose or suggest "control circuitry that synchronizes the multiplexing circuitry, the first encoder, and the second encoder." In responding to Appellant's arguments concerning this limitation, the Examiner merely repeats (twice) the identical allegations that were made in the Final Office Action. (*Compare* Final Office Action at 7-11 with Appeal Brief at 20-23 and 43-47.) Appellant fully addressed these arguments in the Appeal Brief. (*See* Appeal Brief at 17-19.) As previously explained, Hinchley merely teaches that the "multimedia engine 250" adjusts a "data rate" of only an encoder, but says nothing about "synchronization." *Id.* at 6:13-8:44. Indeed, Hinchley fails to make any mention of "synchronization" of anything in its entirety, let alone of the elements and the manner claimed. Adjusting a "data rate" is quite different from "synchronization," as claimed.

Accordingly, clam 10 is also patentable because the proposed combination of Adolph and Hinchley fails to disclose or suggest "control circuitry that synchronizes the multiplexing circuitry, the first encoder, and the second encoder," as required by claim 10.

Finally, it is noted that the Examiner fails to address Appellant's contention that the Examiner has not established a *prima facie* case of obviousness. (*See* Appeal Brief

at 16-17.) Specifically, in proposing to combine Adolph and Hinchley, the Examiner merely states as follows:

> Taking the teachings of Adolph and Hinchley as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Hinchley into the system of Adolph to efficiently multiplex the incoming streams together and flexible to adjust the data rate for different formats.

(Final Office Action at 8.) This conclusory allegation does not provide "articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness" in the detailed manner described in *KSR*. The Examiner fails to provide any explanation of how the alleged efficiency and flexibility would be achieved. Hence, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness and the Board should withdraw the rejection of claim 10.

For at least the above reasons and the reasons set forth in the Appeal Brief, Appellant submits that the claim 10 is patentable over the proposed combination of Adolph and Hinchley. Independent claim 24 is similar in relevant respects to claim 10. Therefore, claim 24 is patentable over the proposed combination of Adolph and Hinchley for at least the reasons stated above regarding claim 10.

B. **Claims 11-23 and 25-36.**

Claims 11-23 and 25-36 depend on independent claims 10 and 24, respectively. Therefore, claims 11-23 and 25-36 are patentable over the proposed combination of Adolph and Hinchley for at least the reasons stated with regard to claims 10 and 24. In rejecting claims 21-23 and 34-36, the Examiner further relies on Ishara and Kopet. Neither of these references overcomes the above-noted deficiencies of Adolph and

Hinchley. Accordingly, claims 21-23 and 34-36 are patentable over Adolph and Hinchley in combination with Ishihara and/or Kopet for at least the reasons stated above in connection with claims 10 and 24.

II. The Claims Are Patentable Over The Proposed Combination of Krishnamurthy And Adolph

A. Independent Claims 10 and 24

In responding to Appellant's concerning the patentability of claims 10 and 24 over the proposed combination of Krishnamurthy and Adolph, the Examiner states as follows:

> The appellant repeatedly argued that the combination of Krishnamurthy and Adolph does not teach the claimed invention as shown in claims 10 and 24.
>
> The examiner respectfully disagrees with the appellant. It is submitted that Krishnamurthy teaches a single-chip audio/video encoder device (fig. 3) that comprises first encoder circuitry (306, ENC1 of fig. 3), second encoder circuitry (306, ENCn of fig. 3), multiplexer circuitry (308 of fig. 3), controller circuitry (304 of fig. 3), and at least one bus interface (302 of fig. 3); wherein the first encoder circuitry (306, ENC1 of fig. 3) comprises: a first video encoder (302 of fig. 3), a first audio encoder (322 of fig. 3), a first motion estimation processor (MPEG-2 encoder, 320 of fig. 2, would obviously comprise a motion estimation processor); wherein the second encoder circuitry (306, ENCn of fig. 3) comprises: a second video encoder (320 of fig. 3), a second motion estimation processor (320 of fig. 3, ENCn, MPEG-2 encoder obviously comprise a motion estimation processor), a second audio encoder (322, ENCn of fig. 3); wherein the multiplexer circuitry (308 of fig. 3) multiplexes the compressed video and audio outputs from the encoders (306 of fig. 3) to produce the multiplexed signal, and the multiplexed signal is transmitted to circuitry external to the device (col. 19, lines 50 52, note the circuitry would obviously be a serial output port).
>
> Krishnamurthy suggests models of encoders and multiplexer (fig. 3) will be useful for the advance allocation statistical multiplexer (e.g. 308 of fig. 3) that have mostly been

developed for natural video and need modifications for game and web content. This is evidence to one skill in the art to use any suitable and conventional device to modify the statistical multiplexer (col. 15, lines 45-50).

Adolph teaches multiplexer circuitry (EMUX of fig. 3) that operates in a first mode (MMUX of fig. 3, the performing of MMUX is considered as the first mode) and a second mode (MUX1 and MUX2 of fig. 3, the performing of MUX 1 and MUX 2 are considered as the second mode), which when operating in the first mode (MMUX of fig. 3) produces a first multiplexed stream from first compressed video (VE1 of fig. 3), first compressed audio (AE1 of fig. 3), second compressed video (VE2 of fig. 3), and second compressed audio (AE2 of fig. 3); and which when operating in the second mode (MUX1 of fig. 3) concurrently produces the first multiplexed stream (the output of MUX 1;) from the first compressed video (VE1 of fig. 3) and the first compressed audio (AE1 of fig. 3), and produces a second multiplexed stream (MUX2 of fig. 3, the output of MUX2) from the second compressed video (VE2 of fig. 3) and the second compressed audio (AE2 of fig. 3), the transport stream (output from MMUX of fig. 3, note MMUX of fig. 3 operates in the two modes, therefore the MMUX enables to multiplex the first multiplexed stream and the second multiplexed stream to produce the transport stream) comprises the first multiplexed stream, which comprises the first compressed video, first compressed video, second compressed video, and second compressed audio, and the second multiplexed stream, which comprises the second compressed video and second compressed audio, wherein the transport stream is transmitted by (SP, ERS, MOD, and BBRF of fig. 3) to circuit (e.g. fig. 4, REBB) external to the MMUX of fig. 3.

Adolph further discloses as following:

Appellant's Claim	ADOLPH TEACHES
IN THE FIRST MODE: **multiplexer circuitry** that operates when operating in **the first mode** produces **a first multiplexed stream** from **first compressed**	MMUX OF FIG. 3 using four components as VE1, AE1, VE2, and AE2 of fig. 3

Appellant's Claim	ADOLPH TEACHES
video, first compressed audio, second compressed video, and **second compressed audio**	
IN THE SECOND MODE: concurrently produces **the first multiplexed stream** from **the first compressed video** and **the first compressed audio**	MUX1 OF FIG. 3 using two components as VE1 and AE1 of fig. 3
IN THE SECOND MODE: produces **a second multiplexed stream** from **the second compressed video** and the **second compressed audio**	MUX 2 OF FIG. 3 using two components as VE2 and AE2 of fig. 3

> Adolph teaches MUX1 produces **the first multiplexed stream** from **the first compressed video VE1** and **the first compressed audio AE1 and MUX 2 produces a second multiplexed stream** from **the second compressed video VE1 and the second compressed audio AE2 in figure 3.**
>
> Since Krishnamurthy and Adolph teach the video and audio signals accordance to MPEG standard and suggest modifications that would be made; therefore one skill of ordinary in the art would combined the suggested teachings of Krishnamurthy and Adolph to make obvious claimed invention.

(Answer at p. 53-55 (emphasis in original).)[1] Accordingly, this rejection is again based on the incorrect premise that Adolph discloses a multiplexer circuit with two modes of operation as required by claim 10. This simply is not true. Rather, Adolph's multiplexer

[1] The Examiner repeats essentially the same arguments concerning Adolph on pages 57-58 and 62 of the Answer. The Examiner's arguments on pages 57-58 and 62 are incorrect for the reasons that are presently discussed.

circuit only has a single mode of operation, namely one that combines data streams for multiple programs into a single transport data stream.

> FIG. 3 illustrates a block diagram of a transmitter for the transmission method according to the invention, two programmes being transmitted by way of example. Video and audio signals V1, A1, V2, A2 are each fed to a source coder VE1, AE1 and VE2, AE2, respectively. A common programme data stream is produced from the source-coded video and audio signals, together with supplementary data which are generated in a stage DE1 and DE2, respectively, in a programme multiplexer MUX1 and MUX2, respectively. **The various (in the example of FIG. 3: two) programme data streams are then combined in a transport multiplexer MMUX to form a transport data stream in accordance with the MPEG2 system specification . . . .**

(Adolph at 4:30-42.) Contrary to the Examiner's contention, MUX1, MUX2 and MMUX do not constitute different modes of operation as recited by Appellant's claim 10. Instead, these elements are different stages of Adolph's EMUX that are used to combine the video and audio signals (V1, V2, A1, A2) from the first and second programs into a single MPEG2 transport data stream. Put another way, the Adolph's EMUX only has a single mode of operation, namely one that combines the video and audio signals (V1, V2, A1, A2) from the first and second programs into a single MPEG2 transport data stream.

Accordingly, claim 10 is patentable at least because the proposed combination of Krishnamurthy and Adolph does not disclose or suggest a multiplexer circuitry that operates in a first mode and a second mode in the manner required by claim 10.

The Examiner states as follows regarding the basis combining Krishnamurthy and Adolph:

> Since Krishnamurthy and Adolph teach the video and audio signals accordance to MPEG standard and suggest modifications that would be made; therefore one skill of ordinary in the art would combined the suggested teachings of Krishnamurthy and Adolph to make obvious claimed invention.
>
> Note not only the specific teachings of a reference but also reasonable inferences which the artisan would have logically drawn therefrom may be properly evaluated in formulating a rejection. In re Preda, 401 F.2d 825, 159 USPQ 342 (CCPA 1968) and In re Shepard, 319 F.2d 194, 138 USPQ 148 (CCPA 1963). Skill in the art is presumed. In re Sovish, 769 F.2d 738, 226 USPQ 771 (Fed. Cir. 1985). Furthermore, artisans must be presumed to know something about the art apart from what the references disclose. In re Jacoby, 309 F.2d 513, 135 USPQ 317 (CCPA 1962).
>
> The obviousness may be made from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference. In re Bozek, 416 F.2d 1385, 163 USPQ 545 (CCPA 1969)). Every reference relies to some extent on knowledge of persons skilled in the art to complement that which is disclosed therein. In re Bode, 550 F.2d 656, 193 USPQ 12 (CCPA 1977).
>
> In response to appellant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Office Action above, paragraph 9, suggests all limitations to make obvious the claimed invention.

(Answer at 55-56.) Appellant maintains that the Examiner has failed to set forth a *prima facie* case of obviousness in the detailed manner required by KSR. Specifically, the Examiner is required to provide "some articulated reasoning with some rationale

underpinning to support the legal conclusion of obviousness." *See KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) quoting *In re Kahn*, 441 F.2d 997,988 (CA Fed. 2006). Put another way, the Examiner should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. The Examiner should make "explicit" this rationale of "the apparent reason to combine the known elements in the fashion claimed," including a detailed explanation of "the effects of demands known to the design community or present in the marketplace" and "the background knowledge possessed by a person having ordinary skill in the art." *Id.* In the present instance, the Examiner recites case law and alleges that the combination would have been obvious. The Examiner fails, however, provide "some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness." Accordingly, the Examiner has failed to establish a *prima facie* case that it would have been obvious to combine Krishnamurthy and Adolph in the manner proposed.

The Examiner also states as follows in responding to Appellant's concerning the patentability of the claims over Krishnamurthy and Adolph:

> The appellant further argued that the cited portion of Krishnamurthy in the Office Action does not teach "wherein the multiplexer circuitry operates in a first mode that multiplexes the first compressed video, the first compressed audio, the second compressed video, and the second compressed audio to produce a first multiplexed stream coupled, and operates in a second mode that multiplexes the first compressed video and the first compressed audio to produce the first multiplexed stream and multiplexes the second compressed video and the second compressed audio to produce a second multiplexed stream".

> The examiner respectfully disagrees with the appellant. It is submitted that the multiplexer circuitry (308 of fig. 3, note the stat-mux board can receive up to 24 different channels of transport bit-streams, col. 18, lines 50-52, from 24 encoders,306-306N of fig. 3, N=24, col 18, line 15)operates in a first mode (col. 20, lines 22-26, "a multi-channel mode" would obviously be considered as a first mode, and the first mode is controlled by the overall board-level controls, col. 19, lines 39-42) that multiplexes the first compressed video, the first compressed audio, the second compressed video, and the second compressed audio to produce a first multiplexed stream (Note the stat-mux, 308 of fig. 3, multiplexes up to 24 different channels of the transport bitstreams from 24 encoders, therefore the stat-mux would encompass to multiplex the first compressed video, the first compressed audio, the second compressed video, and the second compressed audio as four different channels of transports of bitstreams. and operates in a mode that multiplexes the first compressed video and the first compressed audio to produce the first multiplexed stream (326 of fig. 3, to multiplex the first compressed video and the first compressed audio to produce the first multiplexed stream) and multiplexes the second compressed video and the second compressed audio to produce a second multiplexed stream coupled via a second output (326 of fig. 3, to multiplex the second compressed video and the second compressed audio to produce the first multiplexed stream; col. 19, lines 42-45, 328 of fig. SSI of fig. 3).

(Answer at 56-57 (emphasis added).) Appellant disagrees. In the above passage, the Examiner merely identifies elements of Krishnamurthy while offering conclusory statement that Krishnamurthy's "'multi-channel mode' would obviously be considered as a first mode" as recited in the claims. In making this allegation, the Examiner cites to column 20, lines 22-26, which in context reads as follows:

> Each SSI serial input port 336 has three wires carrying a clock signal (sclk), a data signal (sdat), and a frame signal. All 24 clock signals sclk should be configured as the input clock signals and connected to an on-board 27-MHz clock oscillator 504. 27-MHz clock 504 will also be used as the DSP clock, and on-chip PLL circuits will generate a 90-MHz

> DSP clock. In that case, on-chip timers can be used for the PCR time-base corrections. The frame signals will indicate whether or not the data signal sdat carries meaningful data. The data signals sdat are burst with a maximum rate of 27 Mbps. The frame signals can also be programmed in a "multi-channel mode" to send multiple packets into assigned on-chip buffers for transmitting the individual encoders' statistical parameters.

(Krishnamurthy at 20:12-25, where lines 22-26 are underlined.) As can be seen, the above passage of Krishnamurthy teaches that each "SSI serial input port 336" has "clock," "data," and "frame" signals as inputs, and that the "frame" signals will indicate whether the "data" signals carry meaningful data. This passage also states that "[t]he frame signals can also be programmed in a 'multi-channel mode' to send multiple packets into assigned on-chip buffers for transmitting the individual encoders' statistical parameters." Thus, Krishnamurthy clearly teaches that the disclosed "multi-channel mode" relates to transmission of **statistical parameters** of encoders; it does not relate to operating modes that define video and audio content of multiplexed streams. In sum, neither this passage nor any other passage of Krishnamurthy, discloses or suggests a multiplexer with first and second modes of operation, "which when operating in the first mode produces a first multiplexed stream from first compressed video, first compressed audio, second compressed video, and second compressed audio; **and** which when operating in the second mode concurrently produces the first multiplexed stream from the first compressed video and the first compressed audio, and produces a second multiplexed stream from the second compressed video and the second compressed audio," in accordance with Appellant's claim 10.

In the above passage, the examiner also states as follows:

> Note the stat-mux, 308 of fig. 3, multiplexes up to 24 different channels of the transport bitstreams from 24 encoders, therefore the stat-mux would encompass to multiplex the first compressed video, the first compressed audio, the second compressed video, and the second compressed audio as four different channels of transports of bitstreams. and operates in a mode that multiplexes the first compressed video and the first compressed audio to produce the first multiplexed stream (326 of fig. 3, to multiplex the first compressed video and the first compressed audio to produce the first multiplexed stream) and multiplexes the second compressed video and the second compressed audio to produce a second multiplexed stream coupled via a second output (326 of fig. 3, to multiplex the second compressed video and the second compressed audio to produce the first multiplexed stream; col. 19, lines 42-45, 328 of fig. SSI of fig. 3)."

(Answer at 56-57 (emphasis added).) The Examiner apparently alleges that because the stat-mux 308 multiplexes up to 24 different channels of bitstreams it necessarily operates in mode where it "concurrently produces the first multiplexed stream from the first compressed video and the first compressed audio, and produces a second multiplexed stream from the second compressed video and the second compressed audio." However, nothing in the cited passage or elsewhere in Krishnamurthy discloses or suggests a multiplexer circuitry with multiple modes of operation as recited in claim 10. By failing to cite to any credible evidence to support this arbitrary and incorrect construction of Krishnamurthy, the Examiner has not established a *prima facie* case that claim 10 is unpatentable. *See In re Vaidyanathan*, Appeal 2009-1404 at pp. 18-19 (Fed. Cir. May 19, 2010) (nonprecedential) ("If the examiner is able to render a claim obvious simply by saying it is so, neither the Board nor [the Federal Circuit] is capable of reviewing that determination. . . . If there is **neither record evidence nor detailed**

examiner reasoning, the Board should not conclude that … claims are obvious."); *see also In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) ("[T]he Board **cannot** simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense. Rather, **the Board must point to some concrete evidence in the record in support of these findings**."); *see In re Wada and Murphy*, Appeal 2007-3733 (A proper rejection that an Examiner make "a searching comparison of the claimed invention – **including all its limitations** – with the teaching of the prior art."); *see also* MPEP §706.02(j) ("It is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply.")

The Examiner also states as follows in responding to Appellant's concerning the patentability of the claims over Krishnamurthy and Adolph:

> The appellant further argued that the cited figure 3 of Krishnamurthy does not teach circuitry external to the device.
>
> The examiner respectfully disagrees with the appellant. It is submitted that Krishnamurthy teaches the outputs from the stat-mux are transmitted to circuitry (col.19, lines 50-52, note the on-chip DMA will automatically move data from the TS output buffer of on-chip memory to the serial output port, this is evidence that the multiplexed compressed bitstreams are transmitted to the serial output port as circuitry) external to the device (306 and 308 of fig. 3). It is noted that the circuitry external to the device is well known in the art and is taught by Hinchley Note the circuitry external (116 or 112 of fig. 1) to the device (120 of fig. 1, see also fig. 2).

(Answer at 58.) In the above passage, the Examiner cites to column 19, lines 50-52 of Krishnamurthy. In context, this section of Krishnamurthy reads as follows:

> DSP on-chip SSI output port 328 can be directly connected to an SSI input port of a DSP on stat-mux board 308 of FIG. 3. The on-chip DMA will automatically move data from the TS output buffer of on-chip memory to the serial output port. The TMS320c5410 DSP has 128 Kbytes of on-chip memory and a DMA-controlled host interface port, such that external SRAM and FIFO devices may be eliminated. For example, when video encoder 320 is an IBM39 MPEGS422 video encoder chip, the video encoder can directly write its compressed video data into the TMS320c5410 on-chip SRAM with a simple CPLD to emulate the FIFO signals. The PES/TS MUX delay can be within transmitting two TS packets of video streams, such as 2x188X8*vide_rate delay.

(Krishnamurthy at 19:48-61, where lines 50-52 are underlined.) As can be seen, this passage is referring to communications between the encoder boards 306 and the stat-mux 308. This passage does teach, as the Examiner alleges, that "the outputs from the stat-mux are transmitted to circuitry . . . external to the device (306 and 308 of fig. 3)."

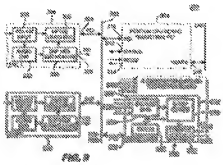
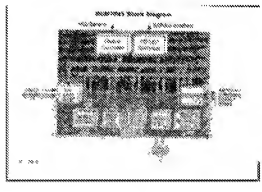
The Examiner also cites to Hinchley as evidence that circuitry external to the device is well known in the art. However, the present rejection is based on Krishnamurthy and Adolph. Accordingly, reference to Hinchley to support this rejection is improper. Regardless, the teaching of Hinchley do not change the fact that Krishnamurthy fails to disclose or suggest "wherein the device transmits the first multiplexed stream to circuitry external to the device via a first output of the device," and "wherein the device transmits the second multiplexed stream to circuitry external to the device via a second output of the device," as recited in claim 10.

The Examiner also states as follows in responding to Appellant's concerning the patentability of the claims over Krishnamurthy and Adolph:

> The appellant repeatedly argued that the Office Action fails to identify any portion of text of Krishnamurthy teaches "multiplexing circuit" for operating in a first mode and second

mode, the first multiplexed stream coupled via the fist *[sic]* output to circuitry external to the device, a second multiplexed stream coupled to via second output to circuitry external to the device, single chip video/audio encoder device, the controller circuitry synchronizes operation of the first encoder circuitry, the second encoder circuitry, and the multiplexer circuitry, pages 13-21 of the remarks.

The examiner respectfully disagrees with the appellant. It is submitted that Krishnamurthy teaches a single audio/video encoder device (fig. 3) that is the same as the described single audio/video device of the present invention as follows:

Krishnamurthy	The Present Invention Relies On 60/296,766
	

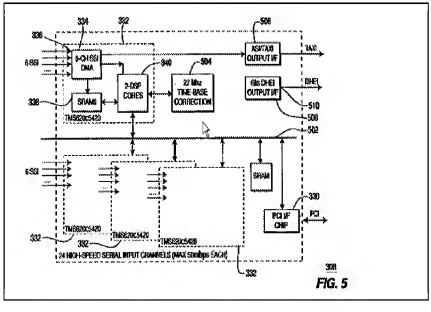
Krishnamurthy teaches a first MPEG-2 video encoder (320), a first audio encoder (322), a second MPEG-2 encoder (320n, 306n), a second audio encoder (322n, 306n), and a statistical multiplexing board (308), wherein the statistical multiplexing board (308 of fig. 3) would obviously be considered as a multiplexing circuit for multiplexing the first encoded video signal and the first encoded audio signal (SSI, 328, 336), and the second encoded video signal and the second encoded audio signal (SSI, 328n, 336), the stat-mux can multiplex up to 24 channels of low delay MPEG-2 video/audio input bitstreams (SSI of fig. 3, col. 18, lines 50-52; col. 20, lines 10-11), and each SSI has three wires carrying a clock signal (sclk), a data signal (sdat), and a frame signal (col. 20, lines 12-13), and the frame signals can also be programmed in a "multichannel mode" to send

> multiple packets into assigned on-chip buffers for transmitting the individual encoders' statistical parameters (col. 20, lines 22-25), so this disclosure would fairly suggest that the stat-mux (308) multiplexing the first encoded video and audio in a first mode and the second encode video and audio in a second mode.

(Answer at 60-61.) This response by the Examiner merely presents a restatement of Appellant's claim language and cites some text from Krishnamurthy that identifies elements of Krishnamurthy. The Examiner then offers only the conclusory statements that "the statistical multiplexing board (308 of fig. 3) would obviously be considered as a multiplexing circuit for multiplexing the first encoded video signal and the first encoded audio signal (SSI, 328, 336), and the second encoded video signal and the second encoded audio signal (SSI, 328n, 336)" and "so this disclosure would fairly suggest that the stat-mux (308) multiplexing the first encoded video and audio in a first mode and the second encode video and audio in a second mode." Initially, Appellant notes that claim 10 does not recite "multiplexing the first encoded video and audio in a first mode and the second encode [sic] video and audio in a second mode," as suggested by the Examiner. In addition, the Examiner fails to provide any explanation of why the simple laundry list of the elements of Krishnamurthy presented by the Examiner is "would obviously be considered" to teach the first mode recited in claim 10 or to "fairly suggest" the second mode recited in claim 10. Again, nothing in the cited passages or elsewhere fairly discloses or suggests a "multiplexing circuit" for operating in a first mode and second mode in the manner recited in claim 10. Nor does the Examiner explain how or why one of ordinary skill in the relevant art at the time of the invention would modify Krishnamurthy to arrive at Appellant's claimed invention. As such, the Examiner has

not established a *prima facie* case that claim 10 is unpatentable. *See In re Vaidyanathan*, Appeal 2009-1404 at pp. 18-19 (Fed. Cir. May 19, 2010) (nonprecedential) ("If the examiner is able to render a claim obvious simply by saying it is so, neither the Board nor [the Federal Circuit] is capable of reviewing that determination. . . . If there is **neither record evidence nor detailed examiner reasoning**, the Board should not conclude that ... claims are obvious."); *see also* MPEP §2142 ("[R]ejections on obviousness cannot be sustained with mere **conclusory** statements.").

The Examiner also states as follows in responding to Appellant's concerning the patentability of the claims over Krishnamurthy and Adolph:



Krishnamurthy further teaches the stat-mux in figure 5 for outputting the multiplexed stream of the first encoded video and the first encoded video to circuitry external to the device (506, col. 20, lines 27-28), wherein the stat-mux would obviously output the multiplexed stream of the second encoded video and the second encoded audio to circuitry external to the device (506; col. 20, lines 27-28).

(Answer at 61-62.) The cited figure of Krishnamurthy reproduced above illustrates what Krishnamurthy describes as "...a board-level block diagram of the statistical multiplexing board of the computer system of FIG. 3." *See id.* at 4:14-15. The illustration of Fig. 5 shows the "stat-mux board 308" with four "TMS320c5420 DSP chips 332" each having six "SSI serial ports 336," in which one of the "TMS320c5420 DSP chips 332" produces a signal to an element labeled as "ASI/TAXI OUTPUT I/F 506," which produces a signal labeled "TAXI". Krishnamurthy also shows an element "GIs DHEI OUTPUT I/F 508" producing a signal "DHEI 510." Krishnamurthy further describes the "stat-mux board 308" as follows:

> Stat-mux board 308 has a PCI bus interface 330 and four DSP chips 332, where each DSP chip 332 has a six-channel SSI DMA (Direct Memory Address) 334 with six SSI ports 336, SRAMs 338, two DSP cores 340, and an ASI/TAXI.TM. chip set from Advanced Micro Devices, Inc., of Sunnyvale, Calif., and, in block 342, a DHEI (Digital High-speed Expansion Interface) I/O port from General Instrument Corporation (GI) of Horsham, Pa., for GI's modulator and CA (Conditional Access) equipment. As such, stat-mux board 308 can support up to 24 channels of low-delay MPEG2 video/audio input bitstreams.

(*Id.* at 18:42-52.) This passage merely simply repeats some of the teachings at column 20, lines 1-11, and in addition, states that an "ASI/TAXI chip set" and "DHEI I/O port" are provided on the "stat-mux board 308". Based on the above, Appellant respectfully submits that Fig. 5. of Krishnamurthy teaches the multiplexing of signals received on "SSI serial ports 336" to produce one "TAXI" output signal, used to transmit "multiple compressed video streams over a **single**, shared communication channel," as stated by Krishnamurthy at column 1, lines 15-19. Krishnamurthy does not, however, disclose or suggest that "stat-mux board 308" of the "computer system" of Fig. 3 produces more

than a single multiplexed stream of compressed audio and video for transmission by the "computer system" of Fig. 3, from the "up to 24 different channels of transport bitstreams from the MPEG-2 encoders" described in the portions and figures of Krishnamurthy, reproduced above.

For at least the above reasons and the reasons set forth in the Appeal Brief, Appellant submits that the claim 10 is patentable over the proposed combination of Krishnamurthy and Adolph. Independent claim 24 is similar in relevant respects to claim 10. Therefore, claim 24 is patentable over the proposed combination of Krishnamurthy and Adolph for at least the reasons stated above regarding claim 10.

B. **Claims 11-23 and 25-36**

Claims 11-23 and 25-36 depend on independent claims 10 and 24, respectively. Therefore, claims 11-23 and 25-36 are patentable over the proposed combination of Krishnamurthy and Adolph for at least the reasons stated with regard to claims 10 and 24.

In rejecting claims 13, 14, 17-19, 21-23, 26, 27, 30-32, and 34-36, the Examiner also relies on Bruck, Hinchley, Boice and Kopet. However, none of these additional references overcome the above-noted deficiencies of Krishnamurthy and Adolph. Accordingly, claims 13, 14, 17-19, 21-23, 26, 27, 30-32, and 34-36 are patentable over Krishnamurthy and Adolph in combination with Bruck, Hinchley, Boice and/or Kopet for at least the reasons stated above in connection with claims 10 and 24.

CONCLUSION

For at least the foregoing reasons, the Appellant submits that claims 10-36 are in condition for allowance. Reversal of the Examiner's rejection and issuance of a patent on the application are therefore requested.

The Commissioner is hereby authorized to charge any fees or credit any overpayment in connection with this filing to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Respectfully submitted,

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